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ABSTRACT

This paper explores some of the conditions currently affecting research and development in education and examines their implication for management. These conditions are: (1) the public expectation of quick and sure responses from the R and D effort, and (2) the genuine wish for increased democratization in society and increased responsiveness on the part of its institutions. For management this will mean: (1) the need to increase the scope of involvement and the human sensitivity of the planning and decision-making processes in the R and D policy and priority setting sector; (2) new mechanisms for evoking responsive corporate behavior to achieve desirable collegial and group productivity; and (3) increased clarity in communications and differentiated products if better practices based on research knowledge are to find their way into the schools and improve learning environments. The paper also reviews federal involvement in educational research, comparative expenditures in different areas for research, the need for more research, development, and training in administration and management, the proposal for the creation of a National Institute of Education, the kind of climate that must be created to encourage potentially effective R and D, and the skills a manager of R and D will need. (AF)

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Educational Research and Development: Implications for Research Management from a National Perspective*

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by

Adolph J. Koenig

The most recent effort to examine the status of educational research and development in the United States was conducted by Dr. Hendrik Gideonse for the Office of Education in response to a request from the Committee on Scientific and Technical Personnel (CSTP) of the Organization for Economic Cooperation and Development (OECD).[1/] The report, published in July, 1969, explores rather fully the development, present status and possible future growth of educational research and development in this country. While reference to selected portions of the report will be made in this discussion, it will hardly do it justice and I recommend the full text for your consideration. It will be my purpose to explore several conditions currently affecting research and development and attempt to examine their implications for management.

An examination of some generalizations about contemporary conditions may help to establish a common framework in which to view my comments.

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* Based on a speech delivered at the Session on Research Management, American Educational Research Association Annual Meeting, March 5, 1970, Minneapolis, Minnesota, the opinions expressed are those of the author and do not constitute either official policy or opinions of the Office of Education. Dr. Koenig is currently Chief, Administration and Organization Studies Branch, National Center for Research and Development, Office of Education.

1/ Hendrik D. Gideonse. "Educational Research and Development in the United States." Washington, D.C.: Bureau of Research, U.S. Office of Education, July, 1969.

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First, this twenty-first century oriented society has been called the atomic age replete with systems sensitive, computer oriented do your own thing generation. The imagery conveyed by the labels is that of an age in which people have come to expect from the flick of a switch instant responses from prevailing technology. People demand rapid and sure responses from their conveniences and want similar responses from their institutions. We know that research and development are not instant processes and that the adoption and implementation of their products require time and user education. There is little doubt that the research and development community is undergoing stress and one way of viewing the causal conditions for it is by examining the disparity between public expectations and R and D processes as factors conditioning the attainment of mutual goals.

While the clamor for improvement of education continues our machinery for bringing knowledge resources to bear on education's problems is meager. Mechanisms for developing, testing and evaluating promising ideas and alternatives to present practice are neither sufficient in number or quality. Efforts, during the past five years, to strengthen our knowledge generating and development capacities have suffered from both insufficient and unstable funding commitments at all levels. While concerned publics debate the issues with increasing sharpness the R and D community is faced with the need to engage in a dialogue for which it is less than adequately prepared. Managers of educational R and D represent one element of education's leadership and will be called upon to respond to questions concerning education's operational

and public needs. Necessarily, such a response must include specification of achievable targets and useful products capable of improving educational practice. These things will have to be done in cost efficient ways and under the alert eyes of publics anxious for progress.

Second, there is a genuine wish for increased democratization in the society and increased responsiveness on the part of its institutions. Education's heritage as a multi-jurisdictional, labor intensive and capital-shy system is one in which decision-sharing is expected and its goal-setting processes mandate multi-group involvement. From such a milieu at least three implications can be drawn for R and D management.

First, we will need to increase the scope of involvement and the human sensitivity of our processes for planning and decision-making in the R and D policy and priority setting sector. More time, more effective communications, more adequate resource allocation procedures will have to be provided if effective achievement of goals and objectives is to be realized.

Second, democratization affects the ways work gets done, the decisions reached and the sanctions provided within the organization. Increased role-function differentiation will require new mechanisms for evoking responsive corporate behavior to achieve desirable collegial and group productivity. While it is essential that organizational manpower be focused on established goals the processes for achieving clearly perceived goals and the group consensus required to allow for efficient

and effective applications of creative talent require examination. Organizational,personnel and management theory must be more fully developed and related more wisely to the job.

Finally, higher levels of involvement in the research and development process will require more resources, increased clarity in communications and differentiated products if better practices based on research knowledge are to find their way into the schools and improve learning environments. The products of research will not only have to be more effective, more efficient and provide tangible cost benefits, but they will have to be able to provide viable alternatives for their application to operational settings. Attention will have to be given to such problems as transition time, training, manpower deployment and availability operational costs and public acceptability. In short, we need to better understand the research, development and adoption processes and develop consonant means for action.

Because national educational aspirations and needs out-distance available resources, priority setting and resource allocation are becoming increasingly competitive. It is essential to make the critical decisions which produce the most beneficial mix of resources to needs. The stress caused by a growing consumer population which views education as a means to economic and social mobility and as an end for intellectual and technological self-realization renders the traditional alternative of unit replication of existing organizations and patterns of opportunity no longer viable. Competition for funds necessitates targeted and mission

oriented activities designed to overcome large scale educational, social, health and environmental problems. The redirection of current activities will compel reassessment of work underway and cause vigorous examination of the value and potential of that proposed. PPBS and notions of cost effectiveness and efficiency are with us in one form or another, and despite their present limitations, will be a framework in which criteria of worth, need and relevancy are applied. The judgemental problems involved are complex and will demand improvement in both practice and information basis for decision-making before a decrease in the risk factors involved can be expected.

The movement toward mission oriented, programmatic research and development will increase our need for basic research, knowledge utilization and the servicing mechanisms to sustain it. Failure to make investments in appropriate order and magnitude or to coalesce the essential physical and human resources needed will deny us the potential inherent in problem solving pursuits. Management will have to employ processes which insure that goal setting, planning, specifying, decision-making and executing activities of the highest caliber occur. Essential will be systems for feedback and evaluation to facilitate and make meaningful process activities. The challenge is great, present tools and processes in management are weak but the job will and must be done!

There is a long history of Federal involvement in educational research and the link between the research and development community and the Federal Government has grown stronger and more mutually dependent over the years.

Since its establishment by the Congress in 1867, the Office of Education has carried the responsibility to collect and diffuse statistics and information reporting on the condition and progress of education.[2/]

The link was further strengthened with the passage in 1954 of the Cooperative Research Act (P.L. 531) which authorized support for research, surveys and demonstrations. By 1958, both the National Defense Education Act and the National Science Foundation's program in course improvement were funded. The decade of the sixties saw additional enactments funded which broadened the role in R and D of the Office of Education and other Federal agencies and facilitated the creation of a variety of new instrumentalities to mobilize and utilize research, development and related resources for education.

Conservative estimates of expenditures for educational research and development in the United States during Fiscal Year, 1968, as reported by Gideonse, exceed $192 million dollars.[1/] Of this amount, $171 million dollars came from the Federal Government with six agencies, the Office of Education, Office of Economic Opportunity, National Science Foundation, National Institute of Child Health and Development, National Institute of Mental Health and the Department of Defense, providing slightly more than 95 percent of the support. Private foundations donated an estimated seven million dollars but this figure seems understated. Other sources of funds were State Education agencies, the university community and private industry.

1/ Hendrik D. Gideonse. "Educational Research and Development in the United States." Washington, D.C.; Bureau of Research, U.S. Office of Education, July, 1969.

2/ "United States Government Organization Manual 1967-1968." Washington, D.C.: National Archives and Records Service of the United States, June, 1967.

Who were the major recipients of these funds? Approximately 50 percent of the funds were used to support projects and grants undertaken by colleges and universities, ten percent went to university-based research and development centers of various kinds, another ten percent were used to support the programs of the several regional educational laboratories and non-profit corporations other than regional education laboratories received ten percent. The remainder was expended through contracts and grants with profit-making corporations, local and State Education agencies or other governmental agencies.

By function, the following percentages apply to the 1968 estimates:

Function	Percent
Research activities	40
Development Activities	40
Evaluation & Achievement studies	4
Dissemination	7
Research Training	5
Demonstration and other activities	4

By substantive area, the analyses of the 1968 expenditures revealed:

Area	Percent
Curriculum development	20
Instructional systems or practices other than explicit development of curriculum.	36
Individual development and learning	20
Studies of educational organizations, trends, needs and objectives	10
Other problems and topics too varied to be individually classified.	14

By both amount expended, by funding agency and by type of recipient organization the link between the Federal Government and the university associated researcher and developer overshadows all other relationships. The enormity of the dependence of the educational research and development community on Federal support is further clarified by other reports describing areas of Federal investment in institutions, organizations and agencies carrying on training, postdoctoral programs, research oriented graduate programs and demonstrations of practices in local schools using products developed from the research knowledge base.[3,4] In addition, funds allocated from State education agency budgets for research and development remain comparatively small in relation to their overall budgets.[5] Large portions of the funds expended by local school districts for demonstration or compensatory program accrue either directly or indirectly from Federal authorizations.[6] While concern for providing research support is growing in agencies and organizations at levels other than those of Federal and university the funds available from such sources are limited and then tend to focus mainly on operational activities.

3/ Edward Gross and Paul V. Grambsch. "University Goals and Academic Power." Washington, D.C.: American Council on Education, 1968.

4/ National Research Council. :The Invisible University: Postdoctoral Education in the United States.: Washington, D.C.: National Academy of Sciences, 1969.

5/ John Bean, "Research in State Departments of Education: Washington, D.C.: U.S. Government Printing Office, 1965.

6/ Lanier Cox. "Impact of Federal Programs on State Planning and Coordination of Higher Education." Atlanta, Ga.: Southern Region Education Board, 1969.

It was no chance conclusion drawn by Lanier Cox after his study of the "Impact of Federal Programs on State Planning and Coordination of Higher Education," that university-based researchers and developers evidenced a marked preference for dealing directly with Federal agencies for funds rather than with either State or local agencies. 6/ Profit-making organizations, non-profit contractors and independents manifest their interest toward operational and mission oriented agencies. Whatever the reasons for their preference, the strong link between Federal agencies and campus-related researchers constitute an essential condition inherent in the management of educational research and development.

One would expect of so close a relationship a strong clientele orientation on the part of research sponsoring agencies and formidable constituency requesting funds for research and development. Furthermore, with the reputed condition of our educational system and the daily crisis it faces, one would expect spending for research and development to strengthen and improve American education would be commensurate with that of other major national institutions.

The record speaks for itself. Frederick Bolman observed that while industry allocates approximately 3.4 percent of its total expenditures to research and development education allocates 0.1 percent.7/ The Gideonse

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6/ Lanier Cox. "Impact of Federal Programs on State Planning and Coordination of Higher Education." Atlanta, Ga.: Southern Region Education Board, 1969.

7/ Frederick W. Bolman. "Problems of Change and Charging Problems," Educational Researcher, Volume 20, No. 10, 1969.

study cites the following concerning relative industry and Federal agency effort relates in this area. 1/

Industry or Agency	Percent of Total Budget Allocations for R & D
Department of Defense	10.0
Health Industry	5.0
All U. S. Industries	4.2
Textile Industry	.5
Foods Industry	.4
Education	.3

While the education percentage ranks lowest in the six categories presented it should be realized that the figure is significantly higher than it was at the beginning of the sixty's. The cold facts are that little support for research and development is available from the budgets of State and local education agencies. The nation's fifty largest metropolitan school districts have long urged for direct support from the Federal government and to a degree some of the funds they seek would be applied to research and development at the local level. State Education Agencies, through a variety of declarations have indicated their need for Federal support for comprehensive planning, research and programs. Despite these pleas both local district and State agency resources and capacities for research and development are far below that which is necessary to deal effectively with problems occurring at the respective levels.

The condition warrants assessment. The need to bring closer communication

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1/ Hendrik D. Gideonse. "Educational Research and Development in the United States." Washington, D.C.: Bureau of Research, U.S. Office of Education, July, 1969.

and articulation between R and D capabilities and their user publics for the improvement of education is an essential issue for the seventy's. The notion held by many that research and development can be supported in reasonable amounts from local funds should be reassessed and clarified. It may be more practical to view the local school as a consumer of research and development products and to place emphasis on strengthening conditions for training, adoption and implementation than to insist that each school district be responsible for the continuum from research to operational practice. Other models appear more realistic, more productive and less expensive.

Differentiation of function and mechanisms for planning, coordinating, priority setting and decision-making are key elements in systems to articulate knowledge into practice. Linked systems of differentiated capacities which bring to bear critical masses of resources and deal with real problems are a necessity and will require improved management. Ultimately the intelligent deployment of skilled manpower through redefined career roles is dependent on adequate systems of feedback, evaluation and direction setting and much research development of management tools, techniques and processes will be required to strengthen our ability to do the job. More not less support for research, development and training in administration and management of our institutions is a critical need and with it will come the demand for resources to build the capacities, mechanisms and networks to match managerial skills to the challenge of twenty-first century problems. Indeed, the concepts underlying techniques such as a management of objectives, contingency management, convergence and delphi techniques,

strategic planning and a host of lables associated with evaluation and supporting operations research activities will become more familiar. Flow and process charting, PERT, CERT and performance-achievement mapping will be placed in perspective and become an integral form of communication in the more sophisticated management dialogue of the future.

Federal agencies are mission agencies. They are not responsible for maintaining the status quo espcially when the mission is pocked with inequities and problems affecting the public interest. Dr. James J. Gallagher, Deputy Assistant Secretary/Commissioner for Planning, Research and Evaluation, O.E., called attention to the need "to organize a complex system of research, development and dissemination activities that will insure that the outcomes of research and development find their way into educational practice". 8/ His call for the machinery to generate the knowledge and transform it into action in education should generate viable alternatives and solutions to the problems confronting us. Previous experience indicates little observable impact occurred from isolated research projects, the giving of papers and the writing of books as a means of transforming knowl- into action. If action is to occur, and it must, the key ingrediant is people contact with commitment to achieving previously agreed goals and objectives. R and D management is a human resource enterprise and must be essentially directed toward evoking the creative and deliberate action potential possible.

8/ James J. Gallagher. Testimony delivered before the Committee on Education and Labor, Subcommittee on Education, United States House of Representatives, October 2, 1969.

Assistant Secretary/Commissioner James Allen in discussing goals for the Office of Education directed the Office to "assume the obligation for a strong, determined advocacy of needed reform and improvement" in education.[9/] He called for:

1. The development of a nationwide strategy for maintaining a continuing process of improvement and relevance in American education (including the formulation of a plan for linking processes of educational research, development, demonstration, evaluation and dissemination to get the best materials and procedures into practice).

2. The elimination of failures with respect to the education of the disadvantaged (e.g., the right to read program for the 70's).

3. The provision of adequate human, material and financial resources and their more effective distribution in relation to educational need.

Any realistic effort to respond to the Secretary's call for action must encompass the meaningful integration of the R and D community into the education's capacity for self-renewal and redirection.

Wednesday's edition of the New York Times reported on President Nixon's special message to the Congress.[10/] In it, the President argued for various educational reforms and proposed the creation of a National Institute of Education which, in addition to other functions, would serve as a focus for educational research and experimentation. Also

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9/ James E. Allen, "Goals for the Office of Education in the 70's: A Framework for Priorities." Statement to Office of Education Staff, DHEW, November 4, 1969.

10/ New York Times, Excerpts from the President's Special Message to Congress on Education Reform," The New York Times, No. 40,947 (Late City Edition) March 4, 1970. Pg. 28.

called for was a Commission on School Finance to report on "new methods of organization and finance." Finally, a variety of child development projects designed to focus on the individual, his characteristics, needs and environment would be central to the mission of the institute.

The major challenge to the National Institute of Education, when enacted, will be to "begin the serious systematic search for new knowledge to make educational opportunity truly equal." Inherent in such an approach is the need for open measurement of how well the educational process is working and to develop more sensitive and encompassing instruments of learning. Emphasis on accountability for performance and productivity become essential attributes in approaches to solving the problems of education through the application of mission oriented and targeted programs devised to support education. Present circumstances indicates a broader application of such programs in the future and with their use will come increased responsibilities for the management of research and development.

Initially, the Institute's strength will come from a well-developed policy, planning and priority setting machinery involving representation from the several communities and groups of stakeholders concerned with the health of education. A resident staff of

interdisciplinary scholars, fortified by exchange programs designed to make the best intellectual capital available, would focus their attention on problems of: (1) compensatory education, (2) reading, (3) television and learning, and (4) experimental schools. Other target and substantive areas would be added, presumably, as both the planning process indicates and resources become available.

The emergence of recommendations for establishing mechanisms such as the National Institute of Education does not come as a surprise to those who are students of the needs of education and evidence concern over obtaining the critical mass of mechanisms and resources necessary to deal with them in productive ways. For more than a decade statements by Presidents, members of Congress, leading educators and a variety of reports from commissions, task forces and study groups have carried the message of need. The most recent, just several weeks ago, from the Task Force of the Commission on Technology which recommended a network of institutes for education and elaborates on the need for such mission oriented capacities. The potential of institutes to bring modern management technologies to bear on the problems of resource allocation for research, development and adoption is great and for those who would seek managerial roles in such fields the challenge to be proficient in the management systems and techniques required looms large.

The changing climate of education and the world in which its research and development will be done has strong implications for management. We will need to create climates in which, (1) open and questioning minds can freely participate, (2) assessment of present organizational effectiveness can occur, and (3) traditions, values and preferred subjective ways of doing things can be examined without polarizing people into positions of advocacy dominated by non-reasoned arguments. We need to refine our methods for differentiating functions, identifying potentially effective linkages between resource, production and dissemination activities to achieve meaningful changes in practice. Machinery for evaluating and monitoring processes and activities will need to be developed or improved as will those which will facilitate group processes, decision-making and multi-public communications.

Such conditions cannot be realized unless we begin to examine the effectiveness of our machinery for both pre-service and career development of administrators of research and development. Crucial to providing the kind of manpower needed is an understanding of how to apply the basic research knowledge available to the field and the building of laboratories and test facilities in which promising practices can be evaluated and tailored to the differentiated use for which they have been designed. While we continue to spend monies for administration at unprecedented rates, we have never furnished the critical mass of resources necessary to conduct the research, development, testing and training required to enable the realization of climates of interaction,

resource consumption and accountability which could mark significant differences in the productivity of the educational system. The advent of newer technologies, increased knowledge about learning, instruction and conditions effecting both will demand more sophistocated, more sensitive and more knowledgable managers in larger quantities than presently available.

The research and development manager needed now should feel comfortable with and possess demonstrable skills in dealing will an environment rich in: (1) large scale communications, information and management systems linked by computer, television and other hardware oriented networks; (2) individual and group processes capable of evoking intellectual capital in interdesciplinary settings; (3) modern management techniques, methods and practice that increase rather than decrease rationality in processes of choice setting, planning, decision-making and priority-determining; (4) concern for the health and well being of the human resources assigned to the responsiblity, and (5) systems concepts and applications that enable effective organization and control of resources focused on problem solving activities over the macro-micro level continuum.

Clearly we will have to strengthen the quality of administration available to education at all levels. The potential of organized research and development as an integral component of institutional self-renewal is now more openly recognized and its leadership increasingly looked to for guidance in solving operational problems. With such involvement, comes increased responsibility; the attributes which characterize the contributing

researcher and skilled developer may not furnish us with sufficient manpower to assume the self management of our interests and the increased responsiveness being asked us. One of the concerns of this group, the Special Interest Group on Research Management, is to examine the expanding role and responsiblities of R and D management and provide insight to just how and in what ways our community can effect a credible response to it. It's a serious challenge and I expect we ought to be about it!

Thank you.

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